

6.4. Ms. Jodie Rosier, Florida Audubon Society, responded to the public notice requesting the township and ranges for the property.

RESPONSE: The requested information was provided.

6.5. The Florida Division of Historical Resources responded to the public notice by letter dated 10 August 1995 stating that the project is consistent the CZMP and its historic preservation laws and that the project would not impact properties on or eligible for listing on the National Register of Historic Places.

6.6. The National Marine Fisheries Service responded to the public notice by letter dated 9 August 1995 stating that wetlands impacts be avoided and states that if significant amounts of wetlands be impacted other alternatives be explored, and if minor impacts are encountered that these impacts be mitigated on-site. It also offered its services to review mitigation plans.

RESPONSE: The design of this area has been carefully looked at with regard to wetlands. Wetlands have been totally avoided and therefore, no alternatives or mitigation are required.

6.7. Mr. Horace C. Meadows responded to the public notice by letter dated 8 August 1995 stating he strongly opposes the construction of this facility because it would affect him and his family.

6.8. Ms. Carly Anne Johnson responde by telephone dated 24 August 1995 requesting the missing pages of the public notice.

RESPONSE: The missing pages were faxed to her. As a result a new public notice was reissued.

6.9. Ms. Roslyn Kilcollins responded to the public notice by requesting a copy of the notice.

RESPONSE: It was faxed to her.

6.10. Mr. Hank Papini responde to the public notice by telephone stating he did not get a complete public notice and requested that he be given an opportunity to comment during dredging of Brevard Harbor.

RESPONSE: A public notice was sent to Mr. Papini and his name would be added to the dredging public notice list.

6.11. Ms. Kathy Merriman representing Century 21 Realtors and Mr and Mrs Charles Hendry responded to the public notice by letter dated 31 August 1995 expressing her concerns for the value of their property and the odors presented during the dredging process. She requested to be kept appraised of any actions. She also requested to be appraised of such facilities being constructed in the area.

RESPONSE: There would be an impact on property values from the construction of this facility. This impact is being mitigated to the extent possible.

6.12. The State of Florida Department of Community Affairs (DCA) responded to the public notice by letter dated 12 October 1995 stating:

- a. That the Department of Environmental Protection (DEP) indicates a permit would be required prior to construction. It also stated that consent was required to use submerged lands. The DEP also informed us of the proximity of the North Indian River Lagoon Conservation and Recreation Lands (CARL) project. In accordance with the Florida Natural Inventory database a number of state threatened and endangered species could be found in the area including the Florida scrubjay. The state also requested that a copy of the EA be sent to them for review prior to final decision.
- b. In addition, the DCA also sent comments from the St. Johns River Water Management District (SJRWMD). The SJRWMD recommended that the hammocks within the CARL be avoided and that runoff be controlled to avoid impacting seagrass beds in the IWW. The SJRWMD also stated that the work would require a Management and Storage of Surface Waters Permit (MSSW). It also requested that it be included on a future public notice lists.
- c. The Florida Division of Historic Resources also commented to the DCA. The DHR stated that there would be no impacts on projects listed or eligible for listing on the National Register of Historic Places. Furthermore, it also stated that due to the location it was unlikely to affect any such properties. It also stated it was consistent with the historic preservation portion of the Florida Coastal Management Program.
- d. The Marine Fisheries Commission had no comment.
- e. The Florida Department of Transportation had no comment.

RESPONSE:

- a. No submerged lands would be affected from the construction of this project and therefore no consent is required. Prior to dredging consent would be requested. We have reviewed the revised construction plan and no CARL lands would be affected. The Florida scrubjay is also a federally listed species and we have reviewed the impacts on this species and have coordinated our findings with the US Fish and Wildlife Service. They have concurred in that finding. With regard to permit review of the Environmental Assessment by the state prior to the issuance of the Finding of No Significant and State of Findings, in accordance with our regulations governing maintenance dredging activities (33 CFR 335-338), the public notice is the instrument that we use for coordination just like that which governs our regulatory action for

Department of Army permits. We will forward a copy of the draft permit for your information.

b. As stated above, we have avoided the Carl lands and any hammock areas. We will also add their name to the public notice address list.

c. No response required.

d. No response required.

e. No response required.

6.13. A public meeting was held in Scottsmorr, Florida, with FIND and the Corps presenting the proposal to the local residents of the area. A memorandum detailing the meeting and issues are attached. In summary, most of the concerns expressed were for impacts from loss of property values, aesthetics both during construction and long-term, and for groundwater impacts from saltwater intrusion during dredging episodes.

RESPONSE: These impacts are addressed in the EA.

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8.0. REFERENCES

- Florida Department of Transportation (FDOT). 1985. *Florida Land Use, Cover, and Forms Classification System*. Florida Department of Transportation, State Topographic Bureau, Tallahassee, FL.
- Mosura, E. L. 1991. *Environmental Site Documentation for Proposed Dredged Material Disposal Areas in Brevard County, Volume IX — BV-2C*. Water and Air Research, Inc., Gainesville, FL.
- Taylor, R. B. and McFetridge, W. F. 1991a. *Technical Addendum. Long Range Dredged Material Management Plan for the Intracoastal Waterway in Brevard*

- County, Florida. Reach I Restudy.* Taylor Engineering, Inc., Jacksonville, FL.
- Taylor, R. B. and McFetridge, W. F. 1991b. *Technical Addendum II. Long Range Dredged Material Management Plan for the Intracoastal Waterway in Brevard County, Florida. Reach I Restudy.* Taylor Engineering, Inc., Jacksonville, FL.
- Taylor, R. B., McFetridge, W. F, and Cochrane, M. L. 1992. *Management Plan BV-2C Dredged Material Management Area.* Taylor Engineering, Inc., Jacksonville, FL.
- Taylor, R. B., McFetridge, W. F, and Cochrane, M. L. 1989. *Long-Range Dredged Material Management Plan for the Intracoastal Waterway in Brevard County, Florida.* Taylor Engineering, Inc., Jacksonville, FL.
- Trefry, J.H., Metz, S., Trocine, R.P., Iricanin, N., Burnside, E., Chen, N., and Webb, B. 1990. *Design and Operation of a Muck Sediment Survey.* Special Publication SJ 90-SP3. St. Johns River Water Management District, Palatka, FL.
- U.S. Army Corps of Engineers (COE). 1993. *Final Migratory Bird Protection Policy.* Jacksonville, FL
- Taylor, R. B., McFetridge, W. F, and Cochrane, M. L. 1995. *Preliminary Environmental Assessment for Construction of Dredged Material Management Area BV-2C.* Taylor Engineering, Inc., Jacksonville, FL.

APPENDIX I

ENVIRONMENTAL SITE DOCUMENTATION

**ENVIRONMENTAL SITE DOCUMENTATION
FOR
PROPOSED DREDGED MATERIAL DISPOSAL AREAS
IN BREVARD COUNTY**

VOLUME IX - BV-2C

Report Prepared Under Contract to:

**TAYLOR ENGINEERING, INC. FOR THE
FLORIDA INLAND NAVIGATION DISTRICT**

Prepared by:

E. Lynn Mosura

**WATER AND AIR RESEARCH, INC.
Gainesville, Florida**

**September 1991
File: 90-7530**

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1.0 INTRODUCTION

1.0 INTRODUCTION

A 50-year dredged material management plan is being developed for the Intracoastal Waterway (ICWW) in Brevard County, Florida. The plan concept was developed during Phase I of the project (Taylor and McFetridge 1989). Potential sites were screened for dredged material disposal, and a total of seven primary and seven secondary sites were selected after consideration of environmental, engineering, and operational features.

During the current Phase II effort, primary sites (or in some cases secondary sites) will undergo further environmental scrutiny to assure the selection of sites with minimal environmental constraints. This document reports the results of the environmental survey carried out at one of these sites.

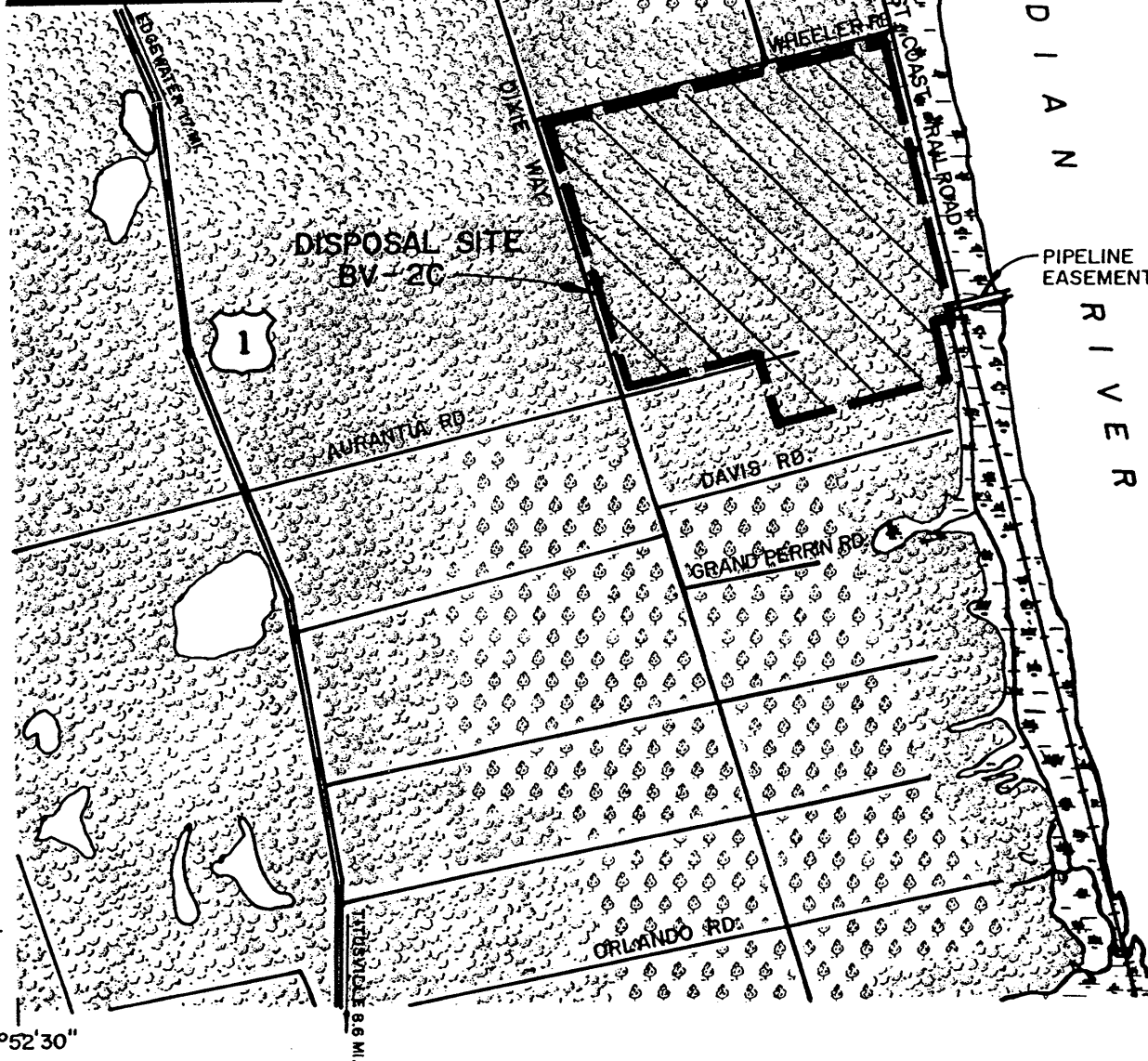
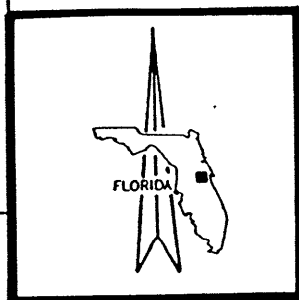
BV-2C is a 311-acre site located approximately four and one-half miles north of Mims, Florida. The site is approximately one mile east of U.S. Highway 1 and is bordered to the east by the Florida East Coast Railway Company right-of-way. It is bordered to the north by Wheeler Road, to the west by Dixie Way and to the south partly by Aurantia Road (Figure 1-1). It is predominately citrus grove or former citrus grove. The site slopes toward the Indian River with elevations between 10 to 15 feet on the west side of the property to below 5 feet NGVD on the east side.

There are a variety of poorly drained soils on the site including Bradenton fine sand, Felda sand, Immokalee sand, Myakka sand, Valkaria sand, Wabasso sand, and Pompano sand. A few areas of very poorly drained Chobee loamy sand, Anclote sand, Copeland complex and Tidal marsh occur on the site, mostly in wetlands. Citrus can be cultivated on the poorly drained soils by using bedding techniques and draining off water through ditches.

A review of the Florida Master File indicates no historical or archaeological sites known on this property.

80°52'30"

28°45'00"



28°45'00"

REFERENCED

USGS MIMS, FLORIDA QUAD-
RANGE 1949, REVISED 1970.
USGS OAK HILL, FLORIDA
QUADRANGLE 1949, REVISED
1970.



TAYLOR ENGINEERING INC
9086 CYPRESS GREEN DRIVE
JACKSONVILLE, FLORIDA 32256

Figure 1-1
Location of Dredged Material Disposal
Site BV-2C
Brevard County, Florida

PROJECT
REVISION
SHEET
DATE

FIND.26[WP]BV2C-1.3
9/27/91

The pipeline easement to the Indian River leaves the proposed disposal site from the southeastern corner of the property. It follows an existing culvert through the railroad grade, then crosses the fringing saltmarsh to the Indian River.

2.0 METHODOLOGY

2.0 METHODOLOGY

Water and Air Research, Inc., biologists ground-truthed the site to assess vegetation and wildlife conditions on September 6, 1991. A previous site visit was made on January 3, 1991. During these visits, incidental wildlife sightings were recorded and vegetation conditions were noted.

Blueline aerial photography (1989) at a scale of 1"=200' was used to identify pertinent land use and vegetation features prior to the pedestrian survey. During the field survey, identified photographic signatures were visited and plant species at these locations were identified or collected for subsequent examination. Vegetation mapping was done on 1989 blueline aerials (1"=200'). The frequency of occurrence of each plant species within each identified community was determined using a qualitative ranking system. Designations include abundant (A), locally abundant (LA), common (C), locally common (LC), occasional (O), rare (R) and trace (X). The site was reviewed for the presence and location of possible wetlands using 1985 black and white (1" = 800'), blueline 1984 color infrared aerial photography (1"=2,000') as well as the 1989 blueline aerial photography mentioned above. U.S. Department of Interior Wetland Inventory Maps, the County's Soil Survey, and USGS topographic maps were also consulted to locate possible wetlands on site.

The occurrence of wildlife species on site was documented during visits to each vegetation community. Efforts were made to visit locations of high wildlife habitat value. Areas that were likely to yield animal signs were sought out (i.e., muddy roads/wetland edges). Indirect evidence (nests, scat, and tracks) and direct observation (calls and visual sightings) were utilized to confirm species present. All ecological surveys were conducted during daylight hours, hence nocturnal wildlife observations were not made.

Prior to the field survey, lists of endangered and threatened species and species of special concern possibly occurring on site were compiled based on

FIND.26[WP]BV2C-2.2
9/27/91

the range of each species and its environmental requirements. The locations of sensitive species found on site were recorded and observations about population size and habitat use were noted.

3.0 VEGETATION COMMUNITIES

3.0 VEGETATION COMMUNITIES

3.1 INTRODUCTION

Vegetation communities identified on the BV-2C site and mapped in Figure 3-1 include citrus grove (221), fallow cropland (261), herbaceous rangeland (310), temperate hardwoods (425), mixed hardwood/ wetland hardwood (438/610), water (500), roads and highways and a variety types of non-forested wetland communities. The vegetation and land uses have been categorized according to Level III of the Florida Land Use, Cover and Forms Classification System (FDOT 1985). Acreages of the various map units were determined by the use of a digitizer and are reported in Table 3-1. Table 3-2 is a listing of the vegetation species by community type found at the site.

3.2 CITRUS GROVE (221)

Active citrus groves are located in the central portion of BV-2C. Some of the groves are mature and bearing fruit while other sections are young, having been planted within the last two years. All the citrus located on site appear healthy and the groves appear well-maintained.

The groves are regularly mowed; therefore, vegetative cover, other than citrus trees, is limited to various grasses and forbs. Common grasses observed include Bermudagrass, guineagrass and goosegrass. Other herbaceous cover includes dayflower, spiny amaranth, and Indian hemp.

The poorly drained soils of the site require drainage to allow for citrus cultivation. Therefore, ditches frequently occur within the citrus groves or along the borders of other community types adjacent to the citrus tracts. Those ditches through the citrus areas are vegetated mostly with primrose willow or Ludwigia octovalvis.

3.3 FALLOW CROPLAND (261)

Most of the eastern part of the site is former citrus grove which has been recently cleared. The vegetative cover consists of grasses and weedy species indicative of the early successional status of the land. Common species observed include guineagrass, wild balsam apple, and blackberry.

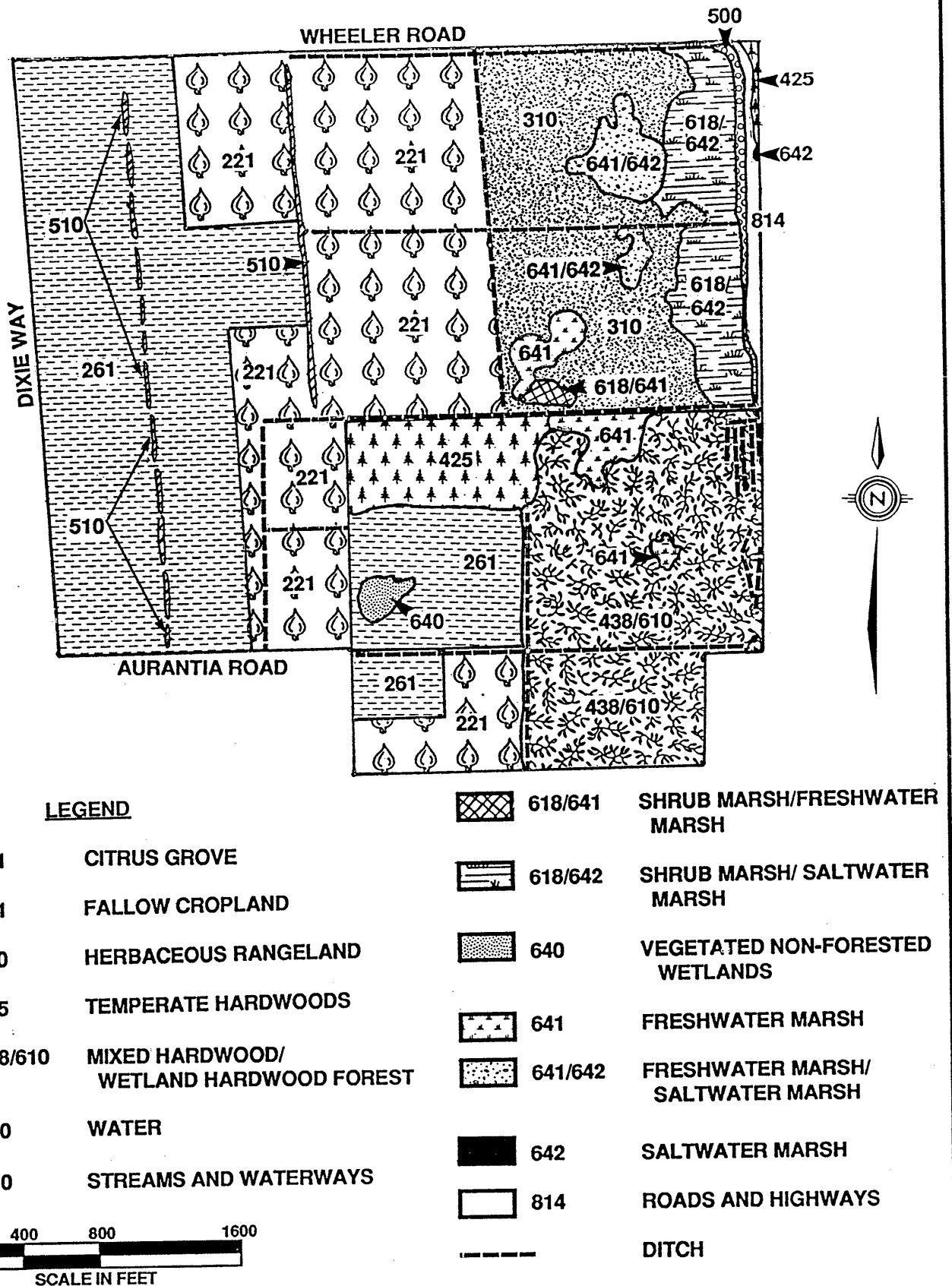


FIGURE 3-1. Vegetation and Land Use of BV-2C Proposed Dredged Material Disposal Area, Brevard County, Florida

SOURCE: WAR 1991.

Table 3-1. Approximate Acreage of the Florida Land Use, Cover and Forms Classification System Found at BV-2C Proposed Disposal Site, Brevard County, Florida

Map ID Number	Name	Approximate Acreage
221	Citrus grove	87.2
261	Fallow cropland	93.8
310	Herbaceous rangeland	38.3
425	Temperate hardwoods	12.1
438/610	Mixed hardwood/Wetland Hardwood Forest	48.0
500	Water	1.9
510	Streams and Waterways	1.9
618/641	Shrub Marsh/Freshwater Marsh	0.6
618/642	Shrub Marsh/Saltwater Marsh	14.5
640	Vegetated Non-forested Wetlands	1.2
641	Freshwater Marsh	5.2
641/642	Freshwater Marsh/Saltwater Marsh	4.7
642	Saltwater Marsh	0.1
814	Roads and Highways	1.9
Total		311.4

Source: WAR 1991.

Table 3-2. Vegetation Observed by Community Type at the BV-2C Proposed
Dredged Material Disposal Site, Brevard County, Florida
(Page 1 of 7)

Species	Common Name	Occurrence
CITRUS GROVE (221)		
Trees and Shrubs		
<u>Citrus sinensis</u>	Sweet orange	A
Herbs and Ground Cover		
<u>Amaranthus spinosus</u>	Spiny amaranth	O
<u>Commelina</u> sp.	Dayflower	LC
<u>Cynodon dactylon</u>	Bermudagrass	O
<u>Cyperus</u> sp.	Sedge	O
<u>Eleusine indica</u>	Goosegrass	C
<u>Panicum maximum</u>	Guineagrass	C-A
<u>Sida rhombifolia</u>	Indian hemp	O
FALLOW CROPLAND (261)		
Herbs and Ground Cover		
<u>Amaranthus spinosus</u>	Spiny amaranth	O
<u>Ambrosia artimisiifolia</u>	Common ragweed	R
<u>Andropogon virginicus</u>	Broomsedge	O-LC
<u>Bidens pilosa</u>	Begger-ticks	LC
<u>Cenchrus</u> sp.	Cenchrus sp.	LC
<u>Chamaesyce hirta</u>	Hairy spurge	O-LC
<u>Commelina</u> sp.	Dayflower	O
<u>Cyperus</u> sp.	Sedge	R
<u>Dactyloctenium aegyptium</u>	Crowfootgrass	O
<u>Eupatorium capillifolium</u>	Dog fennel	O
<u>Indigofera hirsuta</u>	Hairy indigo	O-LC
<u>Ludwigia octovalvis</u>		R
<u>Momordica charantia</u>	Wild balsam apple	LC
<u>Panicum maximum</u>	Guineagrass	A-C
<u>Richardia scabra</u>		O
<u>Rubus</u> sp.	Blackberry	LC
<u>Rumex</u> sp.		O
<u>Setaria</u> sp.		O
<u>Tradescantia ohiensis</u>	Spiderwort	LC

Table 3-2. Vegetation Observed by Community Type at the BV-2C Proposed
Dredged Material Disposal Site, Brevard County, Florida
(Page 2 of 7)

Species	Common Name	Occurrence
HERBACEOUS RANGELAND (310)		
Trees and Shrubs		
<u>Baccharis halimifolia</u>	Groundsel tree	A-C
<u>Lantana camara</u>	Lantana	O
<u>Myrica cerifera</u>	Wax Myrtle	O
<u>Rhus copallina</u>	Winged sumac	C
Herbs and Ground Cover		
<u>Andropogon virginicus</u>	Broomsedge	O
<u>Bidens pilosa</u>	Begger-ticks	O
<u>Cyperus</u> sp.	Sedge	O
<u>Eupatorium capillifolium</u>	Dog fennel	O
<u>Momordica charantia</u>	Wild balsam apple	LC
<u>Paspalum notatum</u>	Bahia grass	LA
<u>Rubus</u> sp.	Blackberry	LC
<u>Setaria</u> sp.		O
TEMPERATE HARDWOOD (425)		
Trees and Shrubs		
<u>Callicarpa americana</u>	Beauty berry	R
<u>Carya glabra</u>	Hickory	R
<u>Celtis laevigata</u>	Hackberry	R
<u>Ilex vomitoria</u>	Yaupon	C-O
<u>Juniperus silicicola</u>	Southern red cedar	LC-X
<u>Liquidambar styraciflua</u>	Sweetgum	R
<u>Magnolia grandiflora</u>	Bull bay	R
<u>Magnolia virginiana</u>	Sweet bay	R-O
<u>Melia azedarach</u>	Chinaberry	O
<u>Quercus virginiana</u>	Live oak	C
<u>Sabal palmetto</u>	Cabbage palm	O-C
<u>Ulmus americana</u>	American elm	X
Herbs and Ground Cover		
<u>Bidens pilosa</u>	Begger-ticks	LC
<u>Blechnum serrulatum</u>	Swamp fern	R
<u>Epidendrum conopseum</u>	Greenfly orchid	O

Table 3-2. Vegetation Observed by Community Type at the BV-2C Proposed
Dredged Material Disposal Site, Brevard County, Florida
(Page 3 of 7)

Species	Common Name	Occurrence
<u>Hyptis mutabilis</u>		LC
<u>Oplismenus setarius</u>	Wood grass	LC
<u>Panicum maximum</u>	Guineagrass	A
<u>Phlebodium aureum</u>	Golden polypody	R
<u>Polypodium polypodiodes</u>	Resurrection fern	LC
<u>Psychotria sulzneri</u>	Wild-coffee	R-O
<u>Pteridium aquilinum</u>	Bracken fern	R
<u>Rivina humilis</u>	Rouge-plant	R-O
<u>Ruellia caroliniensis</u>	Wild petunia	X
<u>Toxicodendron radicans</u>	Poison ivy	R
<u>Vitis rotundifolia</u>	Muscadine	O

MIXED HARDWOOD/WETLAND HARDWOOD FOREST (438/610)

Trees and Shrubs

<u>Acer rubrum</u>	Southern red maple	R-C
<u>Callicarpa americana</u>	Beauty berry	O
<u>Carpinus caroliniana</u>	Ironwood	R
<u>Carya aquatica</u>	Water hickory	O
<u>Celtis laevigata</u>	Hackberry	C
<u>Ilex vomitoria</u>	Yaupon	LC
<u>Juniperus silicicola</u>	Southern red cedar	R-C
<u>Liquidambar styraciflua</u>	Sweetgum	O
<u>Magnolia grandiflora</u>	Bull bay	R
<u>Myrica cerifera</u>	Wax myrtle	O
<u>Psychotria sulzneri</u>	Wild-coffee	O
<u>Quercus laurifolia</u>	Laurel oak	O
<u>Quercus virginiana</u>	Live oak	O
<u>Sabal palmetto</u>	Cabbage palm	O-A
<u>Schinus terebinthifolius</u>	Brazilian pepper	O
<u>Ulmus americana</u>	American elm	R-O

Herbs and Ground Cover

<u>Acrostichum danaeifolium</u>	Giant leather fern	O
<u>Blechnum serrulatum</u>	Swamp fern	O
<u>Cicuta mexicana</u>	Water hemlock	R
<u>Cladium jamaicense</u>	Sawgrass	R
<u>Epidendrum conopseum</u>	Greenfly orchid	O-LC
<u>Gelsemium sempervirens</u>	Yellow jessamine	LC
<u>Habenaria odontopetala</u>	Rein orchid	X

Table 3-2. Vegetation Observed by Community Type at the BV-2C Proposed
Dredged Material Disposal Site, Brevard County, Florida
(Page 4 of 7)

Species	Common Name	Occurrence
<u>Hydrocotyle</u> sp.	Pennywort	O
<u>Nephrolepis</u> sp.	Boston fern	R
<u>Oplismenus</u> <u>setarius</u>	Wood grass	O
<u>Parthenocissus</u> <u>quinquefolia</u>	Virginia creeper	R
<u>Phlebodium</u> <u>aureum</u>	Golden polypody	O
<u>Polypodium</u> <u>polypodiodes</u>	Resurrection fern	LC
<u>Psilotum</u> <u>nudum</u>	Whisk fern	X
<u>Toxicodendron</u> <u>radicans</u>	Poison ivy	R
<u>Vitis</u> <u>rotundifolia</u>	Muscadine	LC
STREAMS AND WATERWAYS (510)		
Trees and Shrubs		
<u>Baccharis</u> <u>halimifolia</u>	Groundsel tree	O
<u>Juniperus</u> <u>silicicola</u>	Southern red cedar	O
<u>Luwigia</u> <u>peruviana</u>	Primrose willow	LC-C
<u>Myrica</u> <u>cerifera</u>	Wax myrtle	R-O
<u>Rhus</u> <u>copallina</u>	Winged sumac	R
<u>Sabal</u> <u>palmetto</u>	Cabbage palm	R-O
Herbs and Ground Covers		
<u>Ambrosia</u> sp.	Ragweed	O-LC
<u>Bidens</u> <u>pilosa</u>	Begger-ticks	LC
<u>Commelina</u> sp.	Dayflower	LC
<u>Momordica</u> <u>charantia</u>	Wild balsam apple	C
<u>Thelypteris</u> <u>hispidula</u>	Aspidium fern	R
<u>Tradescantia</u> <u>ohiensis</u>	Spiderwort	LC
SHRUB MARSH/SALTWATER MARSH (618/642)		
Trees and Shrubs		
<u>Baccharis</u> <u>halimifolia</u>	Groundsel tree	C
<u>Iva</u> <u>frutescens</u>	Marsh elder	LC
<u>Juniperus</u> <u>silicicola</u>	Southern red cedar	R
<u>Myrica</u> <u>cerifera</u>	Wax myrtle	R-O
<u>Salix</u> <u>caroliniana</u>	Carolina willow	O

Table 3-2. Vegetation Observed by Community Type at the BV-2C Proposed
Dredged Material Disposal Site, Brevard County, Florida
(Page 5 of 7)

Species	Common Name	Occurrence
Herbs and Ground Cover		
<u>Andropogon virginicus</u>	Broomsedge	R-O
<u>Borrichia frutescens</u>	Sea ox-eye	LC
<u>Eupatorium serotinum</u>		R
<u>Eustoma exaltatum</u>		O-R
<u>Flaveria linearis</u>		C
<u>Mikania scandens</u>	Hemp vine	O
<u>Paspalum vaginatum</u>	Seashore paspalum	LC
<u>Rumex</u> sp.		LC
<u>Spartina bakeri</u>	Sand cordgrass	O
<u>Vigna luteola</u>		O
FRESHWATER MARSH (641)		
Trees and Shrubs		
<u>Baccharis halimifolia</u>	Groundsel tree	R
<u>Cephalanthus occidentalis</u>	Buttonbush	O
<u>Kosteletzkya virginica</u>	Saltmarsh mallow	LC
<u>Ludwigia peruviana</u>	Primrose willow	O
Herbs and Ground Cover		
<u>Canna flacida</u>	Golden canna	LC
<u>Cladium jamaicense</u>	Sawgrass	C
<u>Fimbristylis castanea</u>		LC
<u>Hydrocotyle</u> sp.	Pennywort	O
<u>Juncus</u> sp.	Rush	O
<u>Pontederia cordata</u>	Pickrel weed	O
<u>Sagittaria lancifolia</u>		LC
FRESHWATER/SALTWATER MARSH (641/642)		
Trees and Shrubs		
<u>Kosteletzkya virginica</u>	Saltmarsh mallow	O
<u>Myrica cerifera</u>	Wax myrtle	O

Table 3-2. Vegetation Observed by Community Type at the BV-2C Proposed
Dredged Material Disposal Site, Brevard County, Florida
(Page 6 of 7)

Species	Common Name	Occurrence
Herbs and Ground Cover		
<u>Acrostichum danaeifolium</u>	Giant leather fern	X-O
<u>Alternanthera philoxeroides</u>	Alligator-weed	R
<u>Andropogon</u> sp.	Broomsedge	X
<u>Borrichia frutescens</u>	Sea ox-eye	O
<u>Cladium jamaicense</u>	Sawgrass	R
<u>Cyperus</u> sp.	Sedge	O
<u>Diodia virginiana</u>	Buttonweed	O
<u>Fimbristylis castanea</u>		O
<u>Juncus roemerianus</u>	Needle rush	C
<u>Juncus</u> sp.	Rush	O-LC
<u>Lemna</u> sp.	Duckweed	LC
<u>Spartina bakeri</u>	Sand cordgrass	C
<u>Typha</u> sp.	Cattail	A
SALTWATER MARSH (642)		
Trees and Shrubs		
<u>Baccharis halimifolia</u>	Groundsel tree	O
<u>Juniperus silicicola</u>	Southern red cedar	R-O
<u>Schinus terebinthifolius</u>	Brazilian pepper	R
Herbs and Ground Cover		
<u>Batis maritima</u>	Saltwort	O
<u>Borrichia frutescens</u>	Sea ox-eye	LC
<u>Cymodocea filiformis</u>	Manatee grass	LC
<u>Eichhornia crassipes</u>	Water hyacinth	R
<u>Heliotropium curassavicum</u>	Seaside heliotrope	LC
<u>Limonium carolinianum</u>	Sea lavender	O
<u>Panicum repens</u>	Torpedo grass	R
<u>Salicornia virginica</u>	Perennial glasswort	C
<u>Setaria</u> sp.		O
<u>Spartina alterniflora</u>	Saltmarsh cordgrass	O
<u>Spartina bakerii</u>	Sand cordgrass	O-LC
<u>Sporobolus virginicus</u>	Seashore dropseed	LC
<u>Typha</u> sp.	Cattail	R
<u>Vigna luteola</u>		R

Table 3-2. Vegetation Observed by Community Type at the BV-2C Proposed
Dredged Material Disposal Site, Brevard County, Florida
(Page 7 of 7)

Species	Common Name	Occurrence
ROADS AND HIGHWAYS (814)		
Trees and Shrubs		
<u>Lantana camara</u>	Lantana	O
<u>Myrica cerifera</u>	Wax myrtle	O
<u>Sabal palmetto</u>	Cabbage palm	O
Herbs and Ground Cover		
<u>Ampelopsis arborea</u>	Peppervine	O
<u>Chamaesyce hirta</u>	Hairy spurge	O
<u>Paspalum notatum</u>	Bahia grass	A
<u>Rhynchelytrum repens</u>	Natalgrass	C

Occurrence Code: A = Abundant; LA = Locally Abundant; C = Common;
LC = Locally Common; O = Occasional; R = Rare; X = Trace.
Where a range of codes are shown, occurrences of a
particular species varies within that community at different
locations.

Source: WAR 1991.

3.4 HERBACEOUS RANGELAND (310)

There is a large area in the northeastern quadrant of the site that is cleared upland. The former and existing use of this area is unclear. This area may have been former citrus grove; however, there is no on-site evidence or any indication of this use in the aerial photographs. The area is vegetated by a variety of grasses including bahia grass as well as herbs and shrubs. Blackberry is prevalent in some areas in addition to wild balsam apple. Shrubs observed include groundsel tree, wax myrtle, and winged sumac.

3.5 TEMPERATE HARDWOODS (425)

There are two areas of temperate hardwoods on the property. One is located in the center of the property and the other is a small, narrow band of forest located in the northeastern corner of the site. The area located in the northeast is dominated by southern red cedar and an understory of yaupon. The central area is a live oak dominated area with cabbage palm commonly observed. Limited clearing previously occurred in this area, removing some trees, much understory and ground cover. The area may have an old homesite but no remains were observed. However, a thorough search of the area was hampered by the tall, thick grasses dominating the area.

The canopy species include bull bay, live oak, hickory and cabbage palm. Understory species include yaupon, and young cabbage palm. Common to occasional ground covers include muscadine, wood grass, wild-coffee and poison ivy.

3.6 MIXED HARDWOOD/WETLAND HARDWOOD FOREST (438/610)

This community is located in the east central and southeastern portion of BV-2C. This is principally a wetland hardwood forest with some area of upland hardwoods interspersed within the slightly higher areas of this community type. These upland areas were not mapped separately. There may have been some limited clearing of one upland area in the northern section of this community based on the aerial photography. At least some of this area is now overgrown with vines.

The wetland hardwood community is dominated by cabbage palm with other hardwoods such as American elm, southern red maple, water hickory, sweetgum, ironwood and blackgum. Red cedar is also occasionally observed in this community. The understory is typically sparse consisting of young cabbage palms and cabbage palm litter. In other slightly drier areas of the forest, live oak is observed or it may be found growing on hummocks in the wetter areas. As conditions become drier the understory and ground cover becomes thicker. Wax myrtle, yaupon, and beautybush were shrubs commonly to occasionally observed. Ground covers include wild-coffee, swamp fern, Boston fern, wood grass and muscadine.

3.7 WATER (500)

There is an area of open water located in the northeastern portion of the site. This is an artificially created waterbody bordering a filled roadbed. It interconnects to the Indian River lagoon through a series of mosquito ditches to the south. During the time of the site visit much of the water surface was covered with duckweed.

3.8 STREAMS AND WATERWAYS (510)

Some large ditches occur on BV-2C to facilitate drainage from poorly drained soils that are currently or formerly in citrus cultivation. Some of these ditches are over thirty feet wide. The margins of these ditches are often vegetated with primrose willow and cattail. Duckweed may cover the water's surface with shrubs and scattered trees growing along the banks. Ditch bank species observed include groundsel tree, wax myrtle, and cabbage palm.

3.9 SHRUB MARSH/FRESHWATER MARSH (618/641)

This community occurs just south of the freshwater marsh community in the northeastern quadrant of the site. It is a composite community containing the same species found in the freshwater marsh community but with a much thicker cover of groundsel tree.

3.10 SHRUB MARSH/SALTWATER MARSH (618/642)

The shrub marsh/saltwater marsh community type is located along the western side of the open water area in the northeastern quadrant of the site. Because this artificially dug waterway allows the penetration of saline water from the Indian River lagoon, this area has many species typically found in the saltmarsh. Along the ecotone between this community with the herbaceous rangeland cover type (310), there is a greater concentration of shrubs, mostly groundsel tree.

In the 618/642 area north of the small ditch, there is scattered Carolina willow along with wax myrtle and groundsel tree. Common ground cover species include sea ox-eye, Flaveria linearis, and seashore paspalum. Sand cordgrass and black rush were observed occasionally in this area.

3.11 VEGETATED NON-FORESTED WETLANDS (640)

An herbaceous wetland was located north of Aurantia Road within a recently cleared citrus grove that is now classified as fallow field (261). The wetland was cleared at the same time, and this field is now recovering from the disturbance. This wetland was not visited but typical species that may be found there include smartweed (Polygonum sp.), Ludwigia octovalvis, and a variety of grasses.

3.12 FRESHWATER MARSH (641)

There are three areas of freshwater marsh located on the site and they all had standing water at the time of the site visit. One is located just south of the herbaceous rangeland area and is partially surrounded by the mixed hardwood/wetland hardwood forest. This area was vegetated with cattail and giant leather fern. Another freshwater marsh was located in the southwestern corner of the herbaceous rangeland cover type. It was vegetated by a moderately diverse flora. Common species observed include golden canna, saltmarsh mallow, rush, and Saggitaria lancifolia. A third freshwater marsh was located in the mixed hardwood/wetland hardwood forest. The dominant cover in this marsh was sawgrass with scattered golden canna and buttonbush.

3.13 FRESHWATER MARSH/SALTWATER MARSH (641/642)

There are two brackish water marshes located in the northeastern quadrant of the site. On the western side of the northernmost marsh there is at least one area that had been previously excavated. Vegetation in this area is dominated by cattail. The marsh has a slight zonation favoring more freshwater species on the east and more salt tolerant plants along the western reaches. Common plant species observed include sand cordgrass, needle rush, and sawgrass. The other brackish water marsh is located just south of a small drainage ditch.

3.14 SALTWATER MARSH (642)

There are several areas of saltmarsh located within the study site. One is a small area located just east of the filled road in the northeastern part of the site. There is also marsh species growing in narrow bands along the mosquito ditches in the east central part of the property.

3.15 ROADS AND HIGHWAYS (814)

A filled road is located along the eastern boundary of the site in the northeastern corner. This filled road is vegetated with bahia grass and also has numerous shrubs and small trees growing along its banks. The area is bordered by the open water area to the west and the saltmarsh to the east.

3.16 ENDANGERED AND THREATENED PLANTS

Table 3-3 lists protected species that may occur on site. Since the orange groves are regularly disturbed and the fallow fields were recently cleared, it is unlikely that many listed plants occur in these community types.

The wetlands, ditches, and forested communities provide good habitat for ferns. Most ferns in Florida are protected, even though some are relatively common. The aspidium fern (Thelypteris hispidula) was observed growing along ditches in several locations. The giant leather fern was found growing in freshwater (641) and brackish water marshes (641/642) as well as along mosquito ditches in the hydric hammock area (438/610). The golden fern was observed commonly on cabbage palms in the temperate hardwood (425) and mixed hardwood/wetland hardwood forests (438/610). A whisk fern was observed

Table 3-3. Status of State or Federally Listed Endangered and Threatened Plants that May Occur at BV-2C Proposed Dredged Material Disposal Site, Brevard County, Florida (Page 1 of 2)

Species	Status		
	State	FCREPA	Federal
<u>Aerostichum danaeifolium</u> * Giant leather fern	T		
<u>Asplenium platyneuron</u> Ebony spleenwort	T		
<u>Cereus gracilis</u> Prickly apple	E	C2, II	
<u>Encyclia tampensis</u> Butterfly orchid	T	II	
<u>Epidendrum conopseum</u> * Greenfly orchid	T	II	
<u>Habenaria quinqueseta</u> * Rein orchid	T	II	
<u>Matelea floridana</u> Florida anglepod	E	C2	
<u>Ophioglossum palmatum</u> Hand adder's tongue fern	E		
<u>Osmunda regalis</u> Royal fern	C		
<u>Peperomia humilis</u> Pepper	E		
<u>Phlebodium aureum</u> * Golden polypody	T		
<u>Psilotum nudum</u> * Whisk fern	T		
<u>Thelypteris hispidula</u> * Aspidium fern	T		
<u>Thelypteris kunthii</u> Aspidium fern	T		